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THE NATIONAL SHIPBUILDING RESEARCH PROGRAM

Environmental Training Modules Module 6 - Technical Overview of Environmental Statutes and Regulations

U.S. DEPARTMENT OF THE NAVY
CARDEROCK DIVISION,
NAVAL SURFACE WARFARE CENTER

in cooperation with
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ENVIRONMENTAL TRAINING MODULES

MODULE 6

TECHNICAL OVERVIEW OF ENVIRONMENTAL STATUTES AND REGULATIONS

Prepared by:

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TRAINING MODULES OVERVIEW

Executive Summary and User s Guide (NSRP 0540) Gives an overview of the 10 module set of environmental training modules, plus key issues involved in training in general. Instructions are supplied for how the modules can be modified to suit individual shipyards, as well as hardware and software requirements.

Module 1 (NSRP 0541) Good Environmental Practices

Content: Craft/trade-specific training on items that workers must deal with on a regular basis – material handling, labeling, waste generation/minimization, requirements awareness.

Recipients: New employees on arrival, and existing workers as a refresher.

Module 2 (NSRP 0542) Environmental Practices for Specific Craft/Trade Groups

Content: Specific training on air, hazardous materials, waste minimization, and related environmental considerations, with a focus on the generator personnel and their individual practices and procedures. Emphasis on those personnel likely to encounter a high incidence of problems during their regular duties.

Recipients: Specific craft/trade groups of workers.

Module 3 (NSRP 0543) Shipyard Incident Response Training

Content: Detailed presentation of response requirements specified by OSHA. Basic ingredients of a viable program for a shipyard – what is required and how to reach a satisfactory state of readiness. Includes specific duties of all participants, as well as how to ensure coordination and a common focus. This Module will provide the shipyards with an in-house capability for conducting this important training.

Recipients: Environmental Manager, Environmental Staff Personnel, Safety Engineer, Safety Personnel, Fire Department Personnel, Laboratory Staff and Technicians, Emergency Response Coordinator, Medical Personnel.

Module 4 (NSRP 0544) Shipyard Oil Pollution Prevention and PIC Training

Content: Provides a detailed overview on the federal regulatory oil pollution prevention and response requirements. Also contains specific training material for those shipyard employees with designated “Person in Charge” responsibilities.

Recipients: Ship and Craft Managers and Leadmen, Environmental and Safety Department Personnel, designated Persons in Charge.

Module 5 (NSRP 0545) General Environmental Awareness

Content: Overview of environmental statutes and regulations affecting shipyards, including responsibilities for compliance including both civil and criminal penalties for non-compliance. Includes an overview and explanation of environmental processes - how laws are formulated, the role of environmental groups, consultants, advisers.

Recipients: Senior Management

Module 6 (NSRP 0546) Technical Overview of Environmental Statutes and Regulations

Content: A general but in-depth overview of all environmental statutes and regulations with a focus on shipyard interests, and emphasis on the technical aspects of the requirements.

Recipients: Environmental Managers and staff personnel.

Module 7 (NSRP 0547) Environmental Requirements of Concern to Shipyards

Content: General overview of ALL requirements as they apply to shipyards. Emphasis on technical aspects and actions needed for compliance, rather than on the penalties for non-compliance. Includes overall strategy for developing a strong environmental posture.

Recipients: Senior Management, Supervisors, Generator Personnel; all workers who interface with environmental matters.

Module 8 (NSRP 0548) Generation/Treatment/Minimization of Hazardous Waste

Content: Discussion of regulatory requirements and statutes that apply to shipyard hazardous waste activities. Stresses the high points of the laws, and how to satisfy them. Includes overview of training provided to hazardous waste operators.

Recipients: Middle-level Managers

Module 9 (NSRP 0549) Hazardous Waste Operator Training

Content: Detailed training on practices and procedures performed by hazardous waste operators. Includes reclamation techniques, safe handling practices, labeling/markings, inventory control, hazard minimization.

Recipients: Hazardous Waste Operators; helpers and assistants

Module 10 (NSRP 0550) Environmental Training for Subcontractor Personnel

Content: Briefing on environmental requirements and considerations applicable to all Subcontractor Personnel entering a shipyard environment.

Recipients: Subcontractor Personnel; visitors to a shipyard; transient personnel such as delivery agents, auditors, and oversight personnel.

Technical Overview of Environmental Statutes & Regulations for Shipyards

Objective:

Provide an introduction to the Technical Overview of Environmental Statutes & Regulations for Shipyards training module.

Introduction

Shipyards in the United States find themselves subject, to one extent or another, to most the federal environmental statutes. One reason for this is the fact that federal environmental statutes have commonly had one the environmental media (air, land and water) as the focus of their attention. As shipyards are usually located and operate at the meeting of the three media, there tend to applicable requirements to which the shipyard is subject. A complete listing and explanation of federal environmental laws that may effect shipyard operations is beyond the scope of this training program. There are however four major environmental statutes (and their amendments) that literally effect shipyard operations on daily basis. These statutes are:

- Clean Air Act;
- Clean Water Act;
- Resource Conservation and Recovery Act; and
- Oil Pollution Prevention Act.

These statutes and their federal and state implementing regulations effect:

- shipyard operations, such as abrasive blasting and marine coating application;
- shipyard equipment, such as boilers, diesel engines and furnaces; and
- shipyard processes, such as petroleum product transfers, bilge and tank cleaning and disposal of waste products.

The understanding and implementation of the statutory and regulatory requirements of these statutes is as important to the continued operation of the shipyard as are the production operations. In fact, grievous or continued violations of environmental law could result in the practically closing of

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shipyard (and in the case of criminal violations, responsible shipyard personnel being sent to prison). For these reasons it is critical to understand how the what the law requires and the context in which the requirements are applicable to shipyard operations.

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Objective

Provide an overview of the Clean Water Act.

Introduction

Federal Water Pollution Control Law seeks to protect one of the major environmental media—surface water—by requiring that the discharge of pollutants to those waters be controlled or prevented. The United States has had federal laws governing discharges of waste to surface waters since the enactment of the Refuse Act in 1899. Other federal water pollution laws followed over the course of the next several decades. These laws began with a focus on protecting waters for the purpose of navigation and commerce, and changed over time to protection of public and environmental health.

In 1972, Congress passed the Federal Water Pollution Control Act - now referred to as the Clean Water Act. The Clean Water Act (“CWA”) contained the basic framework for national effluent limitations, water quality standards, a discharge permit program, special provisions for oil spills and toxic substances, and a publicly-owned treatment works (POTW) construction grant program. With some modifications, this system and program remains intact today.

Overview of the Clean Water Act

The Clean Water Act contains six Titles as follows:

- Title I - Research and Related Programs
- Title II - Grants for Construction of Treatment Works
- Title III - Standards and Enforcement
- Title IV - Permits and Licenses
- Title V - General Provisions
- Title VI - State Water Pollution Control Revolving Funds

Titles III and IV of the CWA have had the greatest impact on the operation of industrial facilities in the United States. These Titles provide the basic structure and framework

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establishing water quality standards, regulating discharges into the water and enforcing standard and permit conditions.

Clean Water Titles

Title I

Title I is significant in that it provides a declaration of goals and policies of the CWA (Section 101). While not a legal requirement, the goals and policy statement contained in Title I have been used by the courts and agencies to interpret the intent of Congress and the meaning of the statute language itself.

CWA's stated objective in Title I is to "restore and maintain the chemical, physical and biological integrity of the nation's waters." To achieve that objective, the act establishes the following as "national goals:"

- achievement of a level of water quality which "provides for the protection and propagation of fish, shellfish and wildlife" and "for recreation in and on the water"; and
- elimination of the discharge of pollutants into surface waters,

and a "national policy" that:

- the discharge of toxic pollutants in toxic amounts in prohibited.

While the goals, objectives and policies may not be mandatory, they need to be kept in mind as we try to understand the specifics about the way CWA works. For example, the "restore and maintain" language of the *objective* has been held to mean, at minimum, that we need to have a serious "non-degradation" policy to prevent waters from becoming more polluted than they were when the act first passed in 1972. The first *goal*—the "water quality" goal—protects both the survival and propagation of fish, shellfish and wildlife, and must also provide for "recreation in and on the water." The "elimination" or "no discharge" goal, originally intended to favor land application systems, remains in the law to emphasize the need to reuse and recycle process water and chemicals. The toxics policy provides the focus on

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human health effects in drinking water when we establish water quality criteria.

Title II

This Title provided for federal assistance for municipalities to construct treatment works necessary to meet more stringent discharge requirements imposed by the CWA. This grant program has been amended several times since the CWA was enacted in 1972 and was converted to a revolving loan program by the 1987 amendments, which added Title VI to the CWA.

Title III

Title III establishes the standards of discharge and enforcement provisions of the CWA. Title III, working in conjunction with Title V, (which provides a permit system to allow the discharge of pollutants) forms the basis for most operational requirements derived from the CWA. Additionally, the enforcement provisions contained in Title III provide the “encouragement” required to meet the stringent prohibitions and permit conditions imposed by the CWA upon persons and industry in the United States.

Discharge limits may be adopted using three basic criteria:

- the limits of available or practicable technology;
- limits required to maintain a level of quality in the receiving waters; and/or
- limits required to minimize health or other toxic risks.

Technology based limits are established by the the EPA based on the levels of treatment achieved in industry groups. Water quality based effluent limits are based on attempts to model the maximum quantities of a pollutant a water body have sustain without out degrading its beneficial uses. Effluent toxicity limits are based on testing the discharge to determine if it has short and/or long term toxic effects (acute and/or chronic toxicity).

Amendments to the CWA since 1972 have significantly changed the focus of the process of establishing effluent discharge limits from technology based to toxicity based.

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The 1987 amendments added Section 304(l) to Title III, which requires that each state identify waters within the state where the application of technology-based effluent limitations does not result in the achievement of water quality standards for toxic pollutants. Where noncompliance substantially results from point source discharges of toxic pollutants, the state is to determine which point sources are responsible, and develop individual control strategies for each of these point sources to bring the water body into compliance with water quality standards.

Where states fail to adopt either numerical toxic water quality standards or mathematical methods to calculate toxic effluent limitations appropriate for water quality, the EPA water quality guidelines will become the new state water quality standard. This policy effectively nationalizes water quality standards unless states act to recognize local variations. Though most states are working to adopt new numerical water quality standards for toxic discharges, most have not yet completed the task.

Where numerical standards are impractical, the amended act now requires the EPA to issue guidance on biological monitoring methods. The states are to use such methods in setting standards and assessing compliance under the act. the EPA issued guidance in December 1989 for biomonitoring using five species, three for fresh water, and two for salt water.⁸¹ The EPA is also requiring biomonitoring and whole effluent toxicity testing for Publicly Owned Treatment Works (POTWs) discharging more than one million gallons per day, and smaller, if major industrial discharges are present.

Title III also contains provisions regarding the preventing, notification of and responding to spills. Prevention mandates include the preparation of a Spill Prevention, Control and Countermeasures Plan (SPCC) for facilities that have oil storage capacity above certain thresholds or could be reasonable be expected to cause substantial harm to the environmental by discharging oil into the water.

Section 311 of Title III of the CWA requires the owner or person in charge of any vehicle, vessel or facility from which there is a discharge or threatened discharge of oil or a reportable quantity of a hazardous pollutant to notify the National Response Center. Such reports may not be used as

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the basis for any criminal prosecution against the person reporting, except for false statement or perjury. It is a criminal offense to fail to report, punishable by up to five years in jail.

Enforcement provisions provided for under Title III include administrative, civil and criminal penalties. Amendments to the CWA after 1972 have consistently increased the type and severity of the penalties. The 1987 amendments added Subsection 309(g), which authorizes the EPA to initiate administrative penalties proceedings against violators. The Corps of Engineers may also initiate administrative penalty proceedings for violations of dredge fill permits or permit conditions under section 404 of the Act. Likewise, under the Oil Pollution Act, the Coast Guard may initiate administrative penalty proceedings for violations of section 311.

The statute provides Class I and Class II penalties, which differ primarily with respect to (1) the limits on what penalties the EPA or the Corps can impose, and (2) the procedures the EPA or the Corps must follow to impose them. The upper limit on the penalty which may be imposed in a Class I proceeding is \$25,000 total for the proceeding and \$10,000 per violation. The upper limit on penalties in Class II proceedings is \$125,000, with a \$10,000 maximum penalty per day of violation.

The EPA refers civil enforcement actions to the Department of Justice for action. The 1987 amendments increased available civil penalties under section 309(d) from \$10,000 per day of violation up to \$25,000 per day of violation. Moreover, the amendments changed section 309(d) to set forth a number of factors for the court to weigh in assessing the appropriate amount of civil penalties to assess against a violator, including:

- the seriousness of the violation;
- the economic benefit (if any) resulting from the violation;
- any history of such violations;
- any good faith efforts to comply with applicable requirements;

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- The economic impact of the penalty on the violator; and
- such other factors as justice may require.

Criminal penalties were also increased in the 1987 amendments to the CWA. Under the amended section 309(c) of Title III, criminal penalties now include:

- “Negligent violations” are subject to criminal penalties of not less than \$2,500 or more than \$25,000 per day of violation, as well as up to one year’s imprisonment per day of violation. Penalties and length of imprisonment are doubled for a second offense.
- “Knowing violations” are subject to fines of not less than \$5,000 nor more than \$50,000 per day of violation and up to three years imprisonment per day of violation. Penalty levels double for second offenses.
- “Knowing endangerment,” (where a person knowingly violates a permit or other requirement “and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury) are subject to imprisonment for 15 years and a fine of up to \$250,000, or in the case of an organization, a fine of not more than \$1,000,000. Fines and penalties are doubled for second offenses.
- Criminal penalties for anyone who files false reports or who knowingly falsifies, tampers, or renders inaccurate any monitoring device or method are subject to a \$10,000 fine and imprisonment of up to two years. Penalties double for second offenses.

Title IV

This Title details the relationship between the federal/state implementation program of the CWA. Under this program the federal statute sets mandatory minimum requirements for regulatory programs. However, the states are given both considerable flexibility as to the means of meeting the

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minimum requirements and a nearly free hand when it comes to imposition of requirements more stringent than those required under CWA. The more important federal/state coordination provisions in the CWA include sections 401 and 402, which spell out the process by which states assume responsibility for the discharge permit program in their jurisdictions, the EPA's continuing role in state programs (it has a permit by permit veto), and the states' role in federal permit issuance.

Section 402 of Title IV describes the permit requirements to allow the discharge of pollutants in the water. The permit system is referred to as the National Pollution Discharge Elimination System, and the permits granted under this process are "NPDES" Permits. NPDES permits are usually granted to individual discharges, however, group permits are issued for some industries and some types of discharges (such as stormwater). As the CWA has a blanket prohibition against the discharge of any pollutant into the water, unless the discharge is specifically permitted, any discharge not subject to an NPDES permit can be construed to be in violation of the Act.

Section 402 was amended in 1987 to clarify the requirements for permitting the discharge of stormwater from municipal storm sewer systems and stormwater associated with industrial activities. As a result of this amendment, NPDES permits for the discharge of stormwater are being issued for industrial, construction and municipal stormwater discharges. General and group permits for stormwater discharge have been favored or individual permits to reduce to tremendous administrative burden imposed by bring so many new permittees into the NPDES permit system. This has resulted in many facilities being subject to a individual facility discharge permit for industrial discharges, and a second general or group permit for the discharge of stormwater. Over a period of time, many facilities will have specific stormwater discharge requirements integrated into a single NPDES permit for their facility.

NPDES permits establish specific effluent discharge limitations, monitoring and reporting requirements, and schedules of compliance in the event that a required level of treatment can not be met at the time the permit is issued.

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Permits may be valid for terms of up to five years and may be revoked or modified by the issuing agency with minimal showing of cause. Renewal of the permit at the end of its term usually requires compliance with more stringent criteria promulgated during the term of the permit.

Title IV (Section 404) also addresses the need for a permit to conduct dredge and/or fill operations. Authority was granted to the Army Corps of Engineers to designate dredge spoils disposal areas and to issue permits to discharge material in them. Prior to any dredge or fill operation conducted in the navigable waters of the United States, an Army Corps of Engineers permit to conduct the operation must be procured. Some limited exemptions of the permit requirement do exist (Section 404(f)) if specific effects on navigable waters are avoided.)

Title IV also contains sections requiring permits for disposal of waste (including sewage sludge) into the ocean. No ocean dumping of industrial wastes is permitted, except in limited circumstances. The disposal of sewage sludge to the oceans has also been severely limited.

Title V

Title V contains numerous general provisions containing mostly administrative aspects of the CWA. However, one section of Title V has played an extremely important role in how the CWA has been implemented and interpreted. This section is Section 505, which establishes a citizen's right to sue for violation of CWA provisions, as well as non-compliance with NPDES permit requirements. If the citizen suit prevails in court, the CWA allows for the payment of attorney and expert witness fees. The CWA requires that a citizen first file a notice of intent to sue with the alleged violator and other parties. If an enforcement proceeding has not been initiated by the EPA or other enforcement agency after a 60 days waiting period, the citizen's lawsuit may proceed.

Title VI

This Title, which was added to the CWA in the 1987 amendments, details a revolving loan program by the EPA

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and the states to fund construction for sewage treatment plants. Funding is contingent on meeting substantive criteria similar to receiving grants previously discussed under Title II of the CWA, including state environmental review of the project. The loans must be repaid over a term not to exceed twenty years.

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Objective of this Training Session

To present an overview of the Clean Air Act.

Introduction to the Clean Air Act

The Clean Air Act (CAA) Amendments of 1990 have produced new requirements pertaining to non-attainment, hazardous air pollutants (HAPs), accidental release of extremely hazardous substances (EHS), New Source Performance Standards (NSPS), stratospheric ozone-depleting chemicals (ODCs), permitting, and enforcement. Shipyards will now have to consider the impact not only of major air emissions, but also of minor air emissions. Typical sources of both major and minor air emissions at shipyards include the following:

- process emissions from shipyard operations (e.g., particulate matter [PM] from abrasive blasting and volatile organic compound [VOC] emissions from marine coating operations);
- PM, sulfur dioxide (SO₂), VOC, carbon monoxide (CO), and nitrogen oxides (NO_x) emissions from fuel boilers and furnaces;
- VOC emissions from either of the following:
 1. the use, storage, and transfer and application of paints, adhesives, and solvents); and
 2. degreasing and other processes (e.g., paint stripping and metal finishing) that use solvents.
- CO, NO_x, and VOC emissions from diesel fuel engines on equipment such as cranes and generator sets and vehicles operated on the site; and
- fugitive emissions (that is, those that do not have a distinct emission points from various sources such as metal fumes from welding, burning or cutting operations).

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The Clean Air Act

CAA is the federal enabling legislation that governs air pollution. The implementing U.S. Environmental Protection Agency (the EPA) regulations are contained in 40 CFR 50 - 87. Some of the 1990 CAA Amendments are still in the process of being codified, but those rules and final rules that have been proposed can be found in *Federal Register* notices. Those sections that are applicable to industrial facilities or directly influence state regulations (which in turn affect industrial facilities) are contained in:

- 40 CFR 50 - Primary and Secondary National Ambient Air Quality Standards;
- 40 CFR 51 - State Implementation Plans;
- 40 CFR 52 - Prevention of Significant Deterioration of Air Quality;
- 40 CFR 60 - New Source Performance Standards;
- 40 CFR 61 - National Emission Standards for Hazardous Air Pollutants;
- 40 CFR 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories;
- 40 CFR 68 - Accidental Release Prevention: Risk Management Plans;
- 40 CFR 70 and 71 - State and Federal Operating Permit Program;
- 40 CFR 72 - Acid Rain Program (Permits Regulation)
- 40 CFR 76 - Acid Rain Nitrogen Oxides Emission Reduction Program
- 40 CFR 81 - the EPA Regulations Designating Areas for Air Quality Planning; and
- 40 CFR 82 - the EPA Regulations Pertaining to the Protection of Stratospheric Ozone.

The federal regulations provide a framework within which states or regional agencies design specific regulatory strategies to deal with air pollution problems in their boundaries. Air quality programs are implemented by

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individual states through State Implementation Plans (SIPs), which contain detailed procedures and regulations governing specific types of facilities and operations.

Ambient Air Quality and Non-attainment Issues

As a basis for controlling air quality, the EPA has set primary and secondary National Ambient Air Quality Standards (NAAQS). Primary standards are intended to protect the health of the population; secondary standards are meant to protect the public welfare (for example, vegetation or livestock). NAAQS have been established for 6 pollutants, known as "criteria pollutants." They are SO₂, PM 10 microns or less in diameter (PM₁₀), CO, ozone, NO_x, and lead. Areas are designated by the EPA as either attainment (in compliance with an NAAQS) or non-attainment (out of compliance with an NAAQS). An area may be designated attainment for some pollutants and non-attainment for others, or may be attainment for a secondary standard but not for the corresponding primary standard.

Attainment designations are based on ambient pollutant concentrations measured at certain reference monitors that are generally operated by states, and placed and operated according to certain federal criteria. (Current attainment designations for all areas of the U.S. are listed in the most recent version of 40 CFR 81.301 through 81.356.)

Furthermore, according to the 1990 CAA Amendments, ozone non-attainment is also based on the measured concentration of ozone in an area's ambient air. The ozone non-attainment classifications, in order of increasing severity, are marginal, moderate, serious, severe, and extreme. The 1990 Amendments also established the Northeast Transport Region as part of a new program to attain the ozone NAAQS. The region extends along the eastern seaboard from Northern Virginia to Maine and includes the states of Maryland, Delaware, New Jersey, Pennsylvania, New York, Rhode Island, Massachusetts, New Hampshire, Connecticut, and Vermont. (The 1990 Amendments also substantially altered the standards relating to CO and PM.)

Each non-attainment area's deadline for achieving compliance with the ozone NAAQS is determined by its non-attainment classification. For example, marginal non-attainment areas

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were to achieve attainment by November 1993, while extreme non-attainment areas have until November 2010.

Within the non-attainment region, individual facilities or sources may be classified as “major” sources for ozone. Classification as a “major source” depends on the classification of the non-attainment region and on the source's potential to emit either VOCs or NO_x. (Potential to emit refers to the maximum capacity of the stationary source to emit a pollutant under its physical and operational design.) Any physical or operational limitation on the capacity of the source to emit a pollutant—including air pollution control equipment; restrictions on hours of operation; and restrictions on the type or amount of material combusted, stored, or processed—can be treated as part of its design (for example, a permit condition restricting the number of hours of operation could be used to limit emissions from a source). In determining a facility’s status as a major source, potential emissions from all individual emissions units and operations within the facility must be considered.

If the facility is classified as a major source and is located in a non-attainment area, individual emissions units within the facility may be required to reduce VOC or NO_x emissions by using reasonably available control technology (RACT). These measures are required in order to meet the NAAQS for the pollutants which cause the area to be classified as non-attainment. The 1990 CAA Amendments required that RACT be defined on a case-by-case basis; however, for VOC sources, the EPA has been issuing Control Technology Guidelines (CTGs) that establish the RACT level of control for various industrial categories. The EPA is requiring that revised ozone non-attainment SIPs include RACT for all sources covered by pre-existing VOC CTGs.

In addition to demonstrating that RACT is employed at the facility, major NO_x or VOCs sources must file an annual emissions inventory, certified by a "responsible company official," that lists the emissions units at the facility contributing to these emissions. In some states, an explanation of any increase or decrease in emissions from the previous year must be provided, along with supporting documentation.

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Hazardous Air Pollutants (HAPs)

HAPs are substances that may cause health and environmental effects at low concentrations but that are not regulated as criteria pollutants (though some pollutants may be regulated as both). The CAA now lists 189 HAPs.

A major source for HAP emissions is defined as any stationary source, or a group of stationary sources located within a contiguous area under common control, that emits or has the potential to emit at least 10 tons per year (tpy) of any single HAP or 25 tpy of a combination of HAPs. The EPA has the authority to establish lower emissions thresholds on the basis of potency, persistence of the HAP, potential for bioaccumulation, and other factors. The EPA will likely reduce the major source threshold to 1 tpy for certain extremely hazardous air pollutants. HAP limits apply to both existing and new stationary sources.

The 1990 CAA Amendments substantially revised the program to regulate potential emissions of HAPs. The aim of the new HAP control program is to require state-of-the-art pollution control technology on the vast majority of existing emissions sources and on all new emissions sources. Congress has set a goal of reducing emissions to 90% of their current uncontrolled levels. The HAP provisions regulate emissions in a two-step process: by promulgating emissions limits reflecting the use of Maximum Achievable Control Technologies (MACT) for 174 categories of industrial sources that could potentially emit HAPs; and by determining residual risk in order to control categories whose emissions still present health risks even after the application of MACT. (Residual risk regulations are not expected before the year 2000.)

For each source category, the EPA must promulgate MACT emissions standards that require the maximum reduction in HAP emissions for each new and existing stationary source. The schedule for implementing MACT for a source category is as follows:

- Promulgation of MACT for the source category will be made no later than 1 yr after the category has been proposed.
- Existing major sources must comply with the HAP

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emissions standards within 3 yr of promulgation (a 1-yr extension is possible).

- A new major source constructed after HAP emissions standards are proposed must comply with the standard immediately upon promulgation.

In cases where the EPA was scheduled to but failed to promulgate a source-specific MACT standard, the subject major source is required to obtain an equivalent emission limitation in its Title V permit within 18 months of the EPA's missed promulgation date. Over 50% of the HAPs are VOCs, which are also regulated under the ozone non-attainment provisions, such as RACT discussed previously. However, MACT required under the HAP program may not be equivalent to RACT required under the ozone non-attainment program.

National Emissions Standards for Hazardous Air Pollutants (NESHAPs)

NESHAPs regulate emissions of a small group of toxic pollutants from very specific sources (40 CFR 61). While the NESHAPs program remains in effect, all new regulation of hazardous pollutants will be covered by the HAP program discussed above. The NESHAP that might affect facilities more often than any other is the NESHAP for asbestos. People conducting demolition or renovation operations in structures that contain friable asbestos must comply with NESHAP regulations specifying asbestos emission control procedures and notification requirements. Some state and local standards may be more stringent than the federal ones. Therefore state and local agencies should be contacted prior to any asbestos removal or disposal.

HAPs Other Than Older NESHAPs

All HAPs other than the older NESHAPs are regulated under 40 CFR 63, using a technology-based approach (MACT) to reduce emissions described in the "Hazardous Air Pollutants" section above. In addition to HAP MACT requirements, facilities that have EHS in amounts greater than threshold levels will be required to develop an accident prevention plan.

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Accidental Release of Extremely Hazardous Substances (EHS) Prevention Program

The 1990 CAA Amendments established several major accidental release prevention initiatives that require the EPA to do the following:

- develop a list of EHS and establish thresholds to indicate whether a facility is regulated under the risk management program;
- establish regulations and appropriate guidance, including risk management plan (RMP) requirements, for regulated facilities;
- create an independent Chemical Safety and Hazard Investigation Board; and
- impose legal obligations requiring facilities to operate safely.

The EPA promulgated the list of 140 EHS - 77 toxic substances and 63 flammable ones. EHS are defined as compounds that, if accidentally released, are known to cause death, injury, or serious adverse effects to human health or the environment. Owners/operators of a stationary major source handling any of the EHS over a specified threshold amount must comply with the EPA's accidental release provisions, including the development of an RMP. Threshold quantities for toxics range from 500 to 20,000 lb; for all listed flammables, the threshold quantity is 10,000 lb.

The EPA's final regulations were published on June 20, 1996. Facilities covered under this rule must register with the EPA, develop and implement a risk management program, and submit an RMP by June 21, 1999. Process operations are divided into three categories based on the following:

- the potential for offsite consequences associated with a worst-case accidental release;
- the facility's 5-yr accident history; and
- the facility's compliance with the Process Safety Management (PSM) standard of the Occupational Safety and Health Administration (OSHA).

Processes with no potential impact on the public face minimal requirements. For other processes, facilities' risk

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management programs must include a detailed hazard assessment, an accident prevention program, and emergency response procedures. "Worst-case" release scenarios must be developed, and their results made public. Facilities must also analyze other potentially significant accident release scenarios for each regulated substance that exceeds the threshold quantity.

Manufacturing facilities are the prime target of this the EPA rule, but cold-storage facilities that use ammonia as a refrigerant, public drinking water and wastewater treatment plants, chemical wholesalers, propane retailers, and oil refineries are also covered. The EPA predicts that some 70,000 facilities will fall under this rule.

New Source Performance Standards (NSPS)

NSPS are federally established standards for emissions, operations, and testing that are applicable to new stationary sources constructed, reconstructed, or modified after the NSPS were proposed. There are many specific industrial facilities and operations for which NSPS have been developed. Administration and enforcement of NSPS have been delegated to many states, and the current delegation status is indicated in the regulations at 40 CFR 60.

Ozone-Depleting Chemicals (ODCs)

The 1990 CAA Amendments deal with reducing the emissions of stratospheric ODCs for the first time. CAA requires that the EPA develop regulations mandating a phase-out in the production of two "classes" of ODCs (also known as controlled substances). Class I controlled substances include certain materials that are common to many industrial operations, including methyl chloroform, carbon tetrachloride, chlorofluorocarbons (CFCs), and halons. Class II controlled substances include hydrochlorofluorocarbons (HCFCs) 22, 141b, and 141c.

Class I materials must be phased out of production by January 1, 2000 (January 1, 2002 for methyl chloroform). Use of Class II substances will be restricted by the year 2015 (except for those Class II substances used as refrigerants, which will be restricted by 2020). For both Class I and Class II substances, "production" refers to manufacturing a substance

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from any raw material or feedstock chemical. It does not include the reuse or recycling of a substance, or any controlled substance produced and consumed as part of a manufacturing process.

CAA established standards (effective July 1992) requiring recycling and disposal of Class I and II substances used as refrigerants. People who maintain or repair motor vehicle air conditioners (MVACs) must use approved equipment for recycling or reclaiming refrigerants. Service personnel using this equipment must be properly trained and certified.

As of May 15, 1993, warning labels must be placed on bulk shipment and storage containers of all Class I or Class II substances designated as such by February 11, 1993, and all products that contain such Class I or Class II substances. Products containing Class II substances must also bear the warning label if the EPA determines that there are substitute products that do not rely on the use of the Class II substance. The warning label must state:

Warning: Contains [name of substance], a substance that harms public health and the environment by destroying ozone in the upper atmosphere.

In the case of any substance designated as a Class I or Class II substance after February 11, 1993, the applicable date for labeling the container with the warning statement is 1 yr after the designation of such substance as a Class I or Class II substance, unless otherwise specified in the designation. The warning label must state:

Warning: Manufactured with [name of substance], a substance that harms public health and environment by destroying ozone in the upper atmosphere.

Class I substances must bear this label unless the EPA determines that there are no substitute products or manufacturing processes available that are less harmful to the environment or do not rely on uses of Class I substances.

Air Quality Permitting

Four air quality permitting programs are of importance.

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State Permitting Programs: The primary mechanisms regulating air pollutant emissions from individual sources are state and local regulations. State air regulations are contained in the SIP and must be at least as stringent as the underlying federal requirement. State regulations are often more stringent and cover more areas than the federal CAA, normally having many similar features. However, depending on the type and degree of air pollution problems within the state or region, the individual regulations will vary.

States usually exercise their authority via a permit system. All states require a construction or installation permit for new, expanded, or modified sources of air pollutants. Some states also require operating permits, particularly for larger emissions sources. Some state regulations, such as VOC or PM emissions limits, apply directly to some facilities and operations regardless of permit status.

New Source Review: New Source Review (NSR) is a federal permitting program administered by state regulatory authorities in areas not meeting ambient air quality standards (non-attainment areas). Exact non-attainment NSR procedures vary from state to state, but the requirement for emissions offsets is a common feature intended to allow growth while making progress towards attainment. Under the 1990 CAA Amendments, major new sources or major modifications involving emissions of NO_x or VOCs in ozone non-attainment areas will be required to obtain offsets. In contrast, previous legislation required offsets only for VOCs.

Under the offset requirements, sources planning to increase emissions of a pollutant in a non-attainment area must demonstrate a larger reduction in emissions of the same pollutant, either within their own boundaries or at a source in the same area. The required ratio of decrease to increase varies with the location and size of the source. Areas that show persistent non-attainment may be subject to an outright construction ban until air quality improvement is demonstrated. Sources must also demonstrate that they are employing Lowest Achievable Emissions Reduction (LAER) technology.

Prevention of Significant Deterioration Program: A program parallel to NSR, the Prevention of Significant Deterioration of Air Quality (PSD) program, governs attainment areas. The

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PSD program is designed to permanently limit the degradation of air quality in attainment areas after a certain baseline date (generally in the late 1970s). The PSD program applies to major stationary sources, which it defines as either 28 specific types of stationary sources that have the potential to emit more than 100 tpy of any regulated pollutant, or any other source that emits more than 250 tpy of any one pollutant.

The PSD program also applies to major modifications of stationary sources. If a source is minor, then the modification must itself meet the definition of a major stationary source to incur PSD review. However, if a source is already major, a major modification is defined as a net increase in emissions beyond a certain threshold. The thresholds are listed in the regulations at 40 CFR 51.166(b)(23). Furthermore, small increases in emissions over a period considered to be "contemporaneous" (5 yr in the federal program) can add up to a major modification at a major source. The air emissions rulebook establishes the status of the installation with respect to these changes in emissions.

New sources subject to PSD are also subject to Best Available Control Technology (BACT), a program that parallels the LAER program of non-attainment areas. The BACT program requires sources to review the potential technologies available for control, and select one that meets control standards defined in the BACT guidance manuals and regulations.

Title V Operating Permit Program: Title V of the CAA established a massive new operating permit program to be administered by state agencies. The formal requirements were promulgated as 40 CFR 70; sources subject to Part 70.3 are required to obtain a Title V operating permit. Part 70.3 captures into the Title V program "major" sources of air pollutants, as defined in Part 70.2, as well as sources subject to other specific CAA programs. Once the permit program is in place (mandated within 1995 but still not completely implemented), in order to operate, a facility will be required to hold an operating permit and meet its permit conditions. This new program will affect nearly all sources: existing major sources (of ozone, HAPs, etc.), newly constructed sources (depending on the specific process, quantity of emissions, and the attainment status of the area where the

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source is located), and possibly even sources of minor amounts of air emissions. Many facilities and operations previously exempt from permitting requirements because of their age (i.e. “grandfathered” from the requirements) will also be required to obtain a permit.

Although the primary responsibility for issuing Title V operating permits rests with state agencies, the EPA will administer federal operating permits in areas that lack an the EPA-approved or adequately administered operating permit program and in other limited situations (40 CFR 71).

NO_x Emissions Compliance

States regulate emissions of NO_x into the atmosphere (as well as emissions of VOCs) to meet the NAAQS for ozone. NO_x emissions typically arise from fossil-fuel-burning equipment such as boilers, furnaces, and ovens. Emission limitations are often given in terms of pounds per million Btu (lb/MMBtu), or tpy.

SO₂ Emissions Compliance

Sources burning fuel containing sulfur are typically limited to an allowable emissions rate for SO₂ measured in pounds per hour or per MMBtu. Individual permits or regulations will normally specify these limitations. Testing, monitoring, and sampling data must be retained and available for inspection. In addition, many states regulate the sulfur content of fuel oil or coal used by industrial facilities.

VOC Emissions Compliance

States with ozone non-attainment areas must regulate the emissions of VOCs into the atmosphere to meet the NAAQS for ozone. Typical sources at industrial facilities with the potential to emit VOCs are storage tanks, solvent cleaners and degreasers, painting operations, gasoline dispensing facilities, wastewater treatment facilities, and chemical processing equipment (including distillation units, pumps, flanges, and valves). Emissions limitations will vary from state to state and are often expressed in pounds of VOC per hour or pounds per day.

PM Emissions Compliance

PM emitted from operations and fuel-burning equipment at

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industrial facilities are typically regulated on the state level through individual permits or regulations. Limitations are often expressed as pounds per MMBtu or as grains (of particulate) per dry standard cubic foot (of exhaust gas) (gr/dscf).

Most states also regulate opacity or visible emissions. A typical regulation will limit opacity to 20%, although higher levels are typically allowed for short periods of time and during specified startup and maintenance operations.

Vehicular Emissions

Many states require owners of fleet vehicles to have annual inspections of exhaust gases to determine emissions of CO and hydrocarbons. Some large industrial facilities may have a large number of vehicles and may be required to comply with these regulations. Also, areas with persistent non-attainment problems sometimes have or are developing regulations requiring employers with large numbers of employees (100 or more, for example) to enforce "trip reduction programs" that encourage car pooling and alternative commuting methods, or that require other means of reducing emissions.

Permits to Construct or Install

All states must administer a construction or preconstruction permitting program. Construction permits allow the installation or modification of an air emissions source and typically contain limits on hours of operation, control technology specifications (device type, efficiency, etc.), and emissions. Most state programs provide for permit exemptions based on either *de minimis* emissions (e.g., less than X pounds per hour) or source types (e.g., natural-gas-fired boilers with rated heat capacity less than 10 million Btu per hour). If the new source or modification is large enough, the facility may require a PSD or non-attainment NSR permit in addition to a state construction permit.

Permits to Operate

Industrial facilities in some states may also need to obtain operating permits from the appropriate state agency. However, not all states have operating permit programs. Note that these operating permits are not the same as the newly mandated CAA Title V operating permits. In many states,

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registration or a one-time permit to construct will be required for small sources, while larger sources will often require a renewable permit to operate. Most state operating permits are renewed after anywhere from 1 to 5 yr. Permits to operate may specify operating parameters or require the installation of monitoring devices. Also, the operator may also be required to maintain certain records, reports, and information as stipulated in the individual permits.

Before the 1990 Amendments, not all states had operating permit programs. However, all states must now develop comprehensive operating permit programs. These new operating permits will become air quality enforcement tools and will contain emissions limitations on over 300 regulated pollutants. Operating permit programs will require sources to make compliance certifications and to report facility information at least semiannually. Some states required initial operating permit applications in 1994.

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Objective of this Training Session

To present an overview of the Requirements of the Resource Conservation and Recovery Act.

Introduction of the Resource Conservation and Recovery Act:

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976 as an amendment to the Solid Waste Disposal Act (SWDA). The primary objectives of RCRA are to protect human health and the environment, and to conserve valuable material and energy resources. The most important aspect of RCRA is its establishment of “cradle-to-grave” management and tracking of hazardous waste, from generator to transporter to treatment, storage, and disposal. Other aspects of RCRA include the development of solid waste management plans; prohibition of open dumping; encouragement of recycling, reuse, and treatment of hazardous wastes; establishment of guidelines for solid waste management; and promotion of beneficial solid waste management, resource recovery, and resource conservation systems. Additionally, under corrective action provisions, RCRA also regulates cleanup of contamination, much like the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or “Superfund”). However, RCRA concentrates on active, regulated facilities while CERCLA focuses on inactive or uncontrolled sites.

Amendments to RCRA

Hazardous and Solid Waste Amendments

HSWA, enacted in 1984, reauthorized and amended RCRA and imposed new and far-reaching requirements on the management of hazardous waste. The amendments established programs to regulate small quantity generators of hazardous waste (between 100 and 1,000 Kg of waste/month), restricted land disposal of hazardous waste, established minimum technology requirements for land disposal units, required corrective actions for releases of hazardous waste, regulated underground storage tanks (USTs) containing petroleum products or hazardous substances, initiated listing

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of new materials as hazardous wastes, and set deadlines for the EPA to issue or deny hazardous waste facility operating permits.

Medical Waste Tracking Act of 1988

The Medical Waste Tracking Act (MWTa) of 1988 added a new Subtitle J to RCRA which established a demonstration program for tracking medical wastes. The MWTa required the EPA to promulgate regulations governing segregation, packaging, and labeling of medical wastes; to develop a manifest system for tracking medical wastes from the generator to disposal facility; and to develop record-keeping and reporting requirements for generators who incinerate medical wastes on site.

Major provisions of RCRA:

The RCRA statute is divided into ten subtitles:

- Subtitle A — General Provisions;
- Subtitle B — Office of Solid Waste; Authorities of the Administrator;
- Subtitle C — Hazardous Waste Management;
- Subtitle D — State or Regional Solid Waste Plans;
- Subtitle E — Duties of the Secretary of Commerce in Resource Recovery;
- Subtitle F — Federal Responsibilities;
- Subtitle G — Miscellaneous Provisions (Employee Protection, Citizen Suits, Imminent Hazard, Law Enforcement Authority, etc.);
- Subtitle H — Research Development, Demonstration, and Information;
- Subtitle I — Regulation of Underground Storage Tanks; and
- Subtitle J — Demonstration Medical Waste Tracking Program.

Subtitles C and I have the had the greatest impact on the operations of industrial facilities in the United States,

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including shipyards. Subtitle C establishes a comprehensive management program to regulate hazardous waste from generation through proper disposal or destruction. Subtitle C contains the bulk of the requirements for RCRA permitting, operations, cleanup, closure, and post-closure, and it includes the EPA criteria for identifying hazardous wastes and listing wastes that are hazardous. Subtitle I regulates USTs containing petroleum products or regulated CERCLA substances.

Under Subtitle C, a facility must determine whether any solid waste generated is a hazardous waste not excluded from regulation. This is done by testing the waste stream or simply by knowing how the waste was generated. The company must then calculate the volume of hazardous waste generated monthly. These results allow a determination whether the facility is properly classified as a conditionally exempt small quantity generator (CESQG), small quantity generator (SQG), or fully-regulated generator. Each type of hazardous waste generator is subject to a different level of RCRA notification and operational requirements.

You must notify the U.S. Environmental Protection Agency (the EPA) of your activities and comply with RCRA if you:

- generate more than 1 kg/month of acute hazardous waste or 100 kg/month of hazardous waste;
- transport, treat, store, or dispose of hazardous waste;
- import or serve as a primary exporter of hazardous waste;
- manage recyclable materials in a manner constituting disposal, hazardous waste or used oil burned for energy recovery, recyclable materials used for precious metal recovery, or spent lead-acid batteries being reclaimed;
- use underground tanks to store petroleum or hazardous substances as defined by CERCLA, or “Superfund.”

Permits are required for Treatment, Storage and Disposal (“TSD”) facilities. All new hazardous waste facilities must submit both Part A and Part B applications at least 180 days prior to starting construction. Facilities operating prior to

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1980 must have submitted RCRA notification and a Part A application to qualify for interim status while applying for a final RCRA permit. Facilities that only store hazardous waste on site for less than 90 days, prior to shipment to an off site TSD facility, can operate without a full TSD permit. The vast majority of industrial facilities in the United States that generate and store hazardous waste on site do so without a TSD permit by staying under the 90 day storage limit.

Performance standards for owners and operators of TSD facilities generally do not distinguish between new and existing facilities, except for certain minimum technology requirements. TSDs must comply with general facility standards, formulate emergency preparedness/prevention and contingency plans, and develop procedures to be implemented in an emergency situation. TSDs must also use manifests to track wastes, and they must adhere to recordkeeping, labeling, and other practices. In many cases, TSD facilities must conduct groundwater monitoring and corrective action for past releases. To close a facility, owners and operators must work within approved closure plans and provide financial assurance. In addition, they must maintain liability insurance for sudden and nonsudden releases.

Finally, Subtitle C makes waste minimization an explicit priority by requiring generators to certify that they have undertaken waste reduction efforts.

Solid Waste

Historically, state and local governments have controlled management and disposal of solid wastes (such as municipal waste, mining waste, and other industrial wastes not defined as hazardous). Subtitle D of RCRA provided a minimal federal framework until the 1984 HSWA amendments. With HSWA, both Congress and the EPA are advancing a regulatory program to strengthen technical regulatory controls over many of the 225,000 solid waste facilities nationwide. Proposed regulations will establish requirements for municipal landfills, making many provisions comparable to the landfill requirements under RCRA Subtitle C for hazardous waste land disposal units.

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Underground Storage Tanks

RCRA has two separate programs for regulating USTs:

- Subtitle C of RCRA regulates USTs containing hazardous wastes; and
- Subtitle I of RCRA regulates USTs containing petroleum or hazardous substances (as defined in CERCLA).

The latter is known as the UST program: By definition, a UST has 10 percent or more of its volume below ground (including the volume of pipes).

For existing tank systems regulated under Subtitle I, the EPA regulations include requirements for:

- leak detection or inventory control system and tank testing;
- recordkeeping and reporting;
- corrective action;
- financial responsibility for corrective action/third-party liability; and
- closure.

For new tank systems, regulations include requirements for design, construction, installation, release detection, and compatibility standards.

RCRA Health And Safety Provisions

RCRA provides for health and safety protection in three key areas:

- training programs for all employees involved in hazardous waste management;
- health risk assessment before corrective action at RCRA-regulated facilities;
- monitoring of workers and the site perimeter, as necessary, to safeguard the health of workers and surrounding populations during implementation of corrective action.

OSHA also requires training of workers involved in hazardous

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waste management and emergency response activities.

RCRA Enforcement

Congress' overriding purpose in enacting RCRA was to establish the statutory framework for a national system to ensure proper management of hazardous waste. Therefore, within the RCRA statutes, Congress included various enforcement authorities and provisions for both civil and criminal penalties.

The EPA issues four types of compliance orders as its primary enforcement tool:

- If you are in violation of a regulatory requirement of Subtitle C, the EPA may issue an order requiring compliance immediately or within a specified time period, usually 30 days. These orders include penalties for the noncompliance period (RCRA § 3008(a)).
- When an interim status facility releases hazardous waste to the environment, the EPA may issue an order requiring corrective action or other response measures, to protect human health and the environment. These are known as interim status corrective action orders (RCRA § 3008(h)).
- The EPA has the authority to issue orders requiring monitoring, testing, analyses, and reporting by facilities that may present a substantial hazard to human health or the environment (RCRA § 3013).
- Whenever there is evidence that past or present solid or hazardous waste management practices may pose an imminent and substantial endangerment to health or the environment, the EPA may sue any person who contributed or is contributing to such practices. The EPA may order that person to take action as necessary to protect public health and the environment (RCRA § 7003).

In addition to forcing compliance with RCRA or taking actions to protect public health and the environment, a

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compliance order may also assess a civil penalty for any past or current violation. Penalties shall not exceed \$25,000 per day for each separate RCRA violation. If you fail to take action as specified in an order, you may be fined up to \$25,000 per day of continued noncompliance. In addition, you risk possible suspension or revocation of your permit(s).

Under RCRA § 7002, citizens have the right to sue hazardous waste management facilities. If the EPA or state authorities are not prosecuting under RCRA or CERCLA (or, similarly, have not settled an action via consent decree), citizens are allowed to bring actions where past or present management of hazardous waste presents an imminent hazard.

Criminal enforcement authority is also granted to the the EPA under RCRA. Any responsible person, from an operator to the company president, who knowingly:

- transports hazardous waste to a facility not permitted under RCRA or Title I of the Marine Protection, Research and Sanctuaries Act;
- treats, stores, or disposes of hazardous waste without a permit or knowingly violates any material conditions/requirements of the facility permit (including interim status standards);
- omits material information or makes any false statement or representation in an application, label, manifest, record, report, permit, or other document filed, maintained, or used for compliance with RCRA;
- generates, stores, treats, transports, disposes of, exports, or otherwise handles any hazardous waste and knowingly destroys, alters, conceals, or fails to file records, applications, manifests, reports, or other documents required for compliance with RCRA (or authorized state) requirements;
- transports hazardous waste without a manifest; or

exports hazardous waste without consent or in violation of the receiving country's procedures will, if convicted, be subject to a fine of up to \$50,000 for each day of violation, or imprisonment for as long as five years.

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Anyone who knowingly at the time of any of the above violations places another person in imminent danger of death or bodily injury will, upon conviction, be subject to a fine of up to \$250,000 or imprisonment up to 15 years, or both. An organization will be subject to a fine of up to \$1 million.

Employees, not just owners and operators of TSD facilities, are subject to criminal provisions if they knowingly violate a material condition or requirement of a RCRA permit.

However, employees are protected and cannot be fired for reporting RCRA violations.

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Objective

Provide an overview of the Oil Pollution Prevention Act of 1990.

Introduction

The Oil Pollution Act of 1990 (OPA) is the most comprehensive oil spill liability and prevention regime enacted by any country in the world. For vessel and facility owners and operators, three aspects of the law are particularly significant.

The law creates a new liability and compensation scheme that attempts to set some limits on liability for damages from oil pollution and to define compensation categories. It also substantially increases civil and criminal penalties for many oil pollution-related offenses.

OPA mandates an array of operational requirements intended to prevent spills, most notably the replacement of single hull tankers and barges with double hull vessels. The law requires certificates of financial responsibility evidencing coverage to the new limits. It also dictated that a hierarchy of approved cleanup plans be in place by Aug. 18, 1993, including individual vessel and facility plans to deal with a “worst-case discharge.”

Final rules requiring response plans subsequently were issued for vessels, marine transportation-related facilities, marine non-transportation-related facilities, and railroad tank cars. In addition, an interim final rule requiring response plans from offshore facilities has been extended indefinitely.

Independently, the state legislatures of the coastal states have enacted, are enacting, or undoubtedly will enact their own laws affecting contiguous state waters. For the most part, the state laws impose their own liability and financial responsibility requirements. At least 17 of the 24 coastal states currently provide for unlimited liability in the event of an oil spill.

The Oil Pollution Act of 1990

The Oil Pollution Act of 1990 consists of nine Titles as

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follows:

- Title I - Oil Pollution Liability and Compensation;
- Title II - Conforming Amendments;
- Title III - International Oil Pollution Prevention and Removal;
- Title IV - Prevention and Removal;
- Title V - Prince William Sound Provisions
- Title VI - Miscellaneous;
- Title VII - Oil-Pollution Research and Development Program;
- Title VIII - Trans-Alaska Pipeline System; and
- Title IX - Amendments to Oil Spill Liability Trust Fund, Etc.

Of particular interest to most vessel and facility owners and operators are Titles I and IV. Title I sets forth the elements of liability for oil spills and Title IV provides oil pollution prevention and removal requirements. Specific information regarding several of OPA's Titles are provided below.

Description of OPA-09 Titles

Title I establishes the federal liability system for vessels and facilities that spill oil on waters subject to U.S. jurisdiction. It sets out the scope of the act: the waters, vessels and facilities that OPA applies to. It defines the standard of liability and lists the compensable damages. The provisions of Title I also set up the claims procedures, financial responsibility requirements, and the uses of the \$1 billion Oil Spill Liability Trust Fund.

OPA makes responsible parties for vessels and facilities liable for the results of oil spills without regard to fault, subject only to certain narrow defenses. While this is essentially the same liability that vessel and facility owners and operators had under the Clean Water Act, the damages that can be recovered from them after an oil spill under OPA are potentially much greater.

Section 1002 of Title I states that liability under OPA exists

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“[n]otwithstanding any other provision or rule of law....” This removes any prerequisite to liability such as the requirement that a claimant show physical damage to his property. OPA further states that each responsible party for a vessel or facility is liable for removal costs and damages. This envisions that in some circumstances, multiple responsible parties could be liable for the entire amount of removal costs and damages. This is called joint and several liability.

OPA provides that removal costs can include expenses of actions taken by virtually any agency or department of federal, state, and local governments to avert the threat of a discharge, and to ensure the immediate and effective containment, dispersal and removal of the oil or hazardous substance. These costs and expenses could also include those resulting from whatever action is necessary to protect fish, shellfish, wildlife, public and private property, shorelines, beaches, and living and nonliving natural resources.

A responsible party is also liable for any removal costs incurred under authority of state law. Finally, a responsible party is also liable for any removal costs incurred by any person, that is private individuals and organizations, for actions taken which are consistent with the National Contingency Plan.

In addition to removal costs, OPA makes a responsible party liable for six categories of compensatory damages:

- **Natural Resource:** The United States, individual states, Indian tribes, and foreign governments are entitled to recover from a responsible party for damages, injury to, destruction, loss of, and loss of use of natural resources.
- **Real or Personal Property:** If an oil spill injures real or personal property or diminishes the earnings from that property, the owner, or anyone who leases that property, may claim damages.
- **Subsistence Use:** Any person who relies on natural resources for subsistence (as opposed to commercial reliance which is covered under loss of profits and earnings) may recover damages for injury to natural resources regardless of who owns

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or manages those resources.

- Revenues: Federal, state, and local governments are entitled to recover damages equal to the net loss of taxes, royalties, rents, fees, or net profit shares resulting from the destruction or loss of real or personal property, or natural resources.
- Profits and Earning Capacity: A claimant is entitled to loss of profits or impairment of earning capacity from injury, destruction, or loss of real or personal property or natural resources.
- Public Services: State and local governments are entitled to recover damages for the net costs of providing increased or additional public services resulting from removal activities, including fire, safety, and health protection.

Title II contains conforming amendments transferring the balance of funds under the Clean Water Act, the Deepwater Port Act, and the Outer Continental Shelf Lands Act to the OPA Oil Spill Liability Trust Fund. The Secretary of Transportation is also authorized to utilize the Fund for removal activities under the Intervention on the High Seas Act.

Title III regards the United States participation in international oil pollution conventions. In general, it states that it is the opinion of Congress that the best interests of the United States would be served by participation in an international prevention and compensation regime that was at least as effective as domestic law. Title III also contains provisions regarding cooperation between the United States and Canada on oil pollution matters.

Title IV is divided into three subtitles that effect operation of vessels, establishes a national planning and response system, and increases the severity of criminal and civil penalties that can be imposed on vessel and facility owners and operators for discharges of oil.

Under Subtitle A, Title IV contains new and more stringent licensing and operating requirements designed to ensure the safe transportation and transfer of oil and hazardous substance. Tank vessel manning, marine casualty reporting

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and pilotage requirements were also substantially effected by new and modified requirements.

One of the most impacting requirements in this Title is the double hull requirement for tank vessels. The requirement that a tank vessel had to have a double hull went into effect immediately for new vessels, and according to a phase-out schedule for existing vessels. The phase-out schedule began in 1995 and runs until 2015.

Older and larger vessels are retired first. An existing vessel is one for which a contract for construction or for a major conversion had been placed prior to June 30, 1990, and the vessel was delivered under that contract prior to January 1, 1994. Consequently, a future major conversion on an existing vessel could result in that vessel being treated as a new vessel for double hull purposes. Major conversion means a substantial change in the type, carrying capacity, or dimensions of the vessel, or a conversion that substantially prolongs the life of the vessel or makes it a new vessel. A major reconstruction of the hull structure that enhances environmental compatibility also constitutes a major conversion.

Subtitle B of Title IV is directed towards Federal authority to remove, or avert the threat of an oil spill. This section of OPA states that federal authorities are to ensure the immediate removal of a discharge and mitigate and prevent the substantial threat of a discharge. Federal authorities direct or monitor federal, state, and private removal and mitigation actions. Additionally, the federal authorities may assume the responsibility and costs of the actions that will be subject to reimbursement from the responsible party.

This Subtitle requires federal direction of federal, state, local, and private response, and removal efforts for spills which constitute a substantial threat to public health and welfare. Like other spills, a spill that is a substantial threat to public health and welfare, can be “federalized” by the government agency who undertakes response and removal actions which will allow them to seek reimbursement from the responsible parties.

Subtitle B also creates a new National Planning and Response System under the Clean Water Act. This system creates a

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federal, state, and local hierarchy for spill response. The elements of this system are:

- National Response Unit,
- Coast Guard Strike Teams,
- Coast Guard District Response Groups,
- Local Area Committees,
- Area Contingency Plans, and
- vessel and facility response plans.

The primary purposes of this system is to prevent duplication of federal and private response efforts. While much of the planning and organization is conducted by public agencies and officials, the objective of this system is to have response equipment and personnel primarily provided by private entities.

Owners and operators of tank vessels, offshore facilities and certain onshore facilities are required to prepare response plans to remove discharges of oil. These plans must be consistent with the National Contingency Plans and Area Contingency Plans. Vessel and facility response plans must identify the qualified individual having full authority to implement removal actions and must require immediate communications between federal officials and private removal contractors. The response plans must identify and ensure by contract or other approved means the availability of private personnel and equipment necessary to remove to the maximum extent practicable a worst-case discharge (including a discharge resulting from fire or explosion), and to mitigate or prevent a substantial threat of such a discharge. A “worst case discharge” for a vessel is a discharge of its entire cargo in adverse weather conditions. For a facility, it is the largest foreseeable discharge in adverse weather conditions.

The plans must also describe training, equipment testing, periodic unannounced drills, and response actions of vessel and facility personnel to mitigate or prevent the discharge. The plans must be updated periodically and be resubmitted for approval of each significant change. Removal equipment will be inspected periodically. Vessel and facility owners and

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operators must have an approved response plan within two years of the date of enactment.

Subtitle C of Title IV revise the criminal and civil penalties resulting from the discharge of oil into the water. Previously, under the Clean Water Act, there was no criminal penalty for a simple negligent discharge of oil. This has now been changed to include criminal penalties for negligent acts. Additionally, criminal penalties have been added for violations involving knowing endangerment. Criminal fine penalties now range from \$2,500 to \$25,000 per day of violations for negligently discharging oil; \$5,000 to \$50,000 per day of violation for a knowing discharge of oil, and a maximum fine of \$250,000 for a knowing discharge of oil committed with knowledge that another person is placed in imminent danger of death or serious bodily harm. Prison terms range from 1 to 15 years, depending on the violation.

Administration and civil penalties for the discharge of oil were also expanded. The maximum Class I penalty for a prohibited discharge, or failure to comply with regulations governing the National Contingency Plan, Area Contingency Plans and vessel or facility response plan is now \$10,000 per violation, not to exceed \$25,000. The maximum Class II penalty for a prohibited discharge, or for a violation of a contingency or response plan regulation, is \$10,000 per day of violation, not to exceed \$125,000.

The remaining Titles of OPA (Titles V - XI) contain provisions regarding areas (such as Prince William Sound) and projects (such as the Trans-Alaska Pipeline System) that Congress deemed important to address specifically.

Additionally, under Title VII, an organization was created to provide for the research, development and demonstration of new or improved technologies that would be effective in preventing or mitigating oil discharges and protecting the environment.

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Objective

Gain an overview understanding of the environmental regulations that may effect shipyard operations and processes.

Introduction

From an environmental perspective, shipyards are considered to be a “highly-regulated” industry. One reason for these regulations lie in the fact that a broad range of pollutant generating industrial processes and operations occur in shipyards in a location where air, land and water meet. This proximity to the three environmental media also increases the potential that accidental discharges of oil or hazardous substances will impact the environment before there is an opportunity to contain and clean-up the release. These facts result in shipyards being subject to a greater number of environmental regulations than most industries. This training session outlines some of the basic federal regulatory schemes to which most shipyards are, or could be, subject. State environmental requirements may impose more stringent or additional requirements with which the shipyard must comply.

Overview of Environmental Regulations Affecting Shipyards:

Disposal of Waste: Shipyards are subject to regulations regarding the management and disposal of hazardous wastes and non-hazardous wastes (usually referred to as “solid waste”). All shipyards typically generate both hazardous waste and solid waste, both of which need to be managed and disposed of properly. Improper management and/or disposal of waste has the potential to result in severe penalties.

Hazardous Waste Determination - Anyone who generates waste materials, including small quantity generators, must determine if the waste is hazardous as defined by the Resource Conservation and Recovery Act (“RCRA”). Determining whether a waste is subject to RCRA Subtitle C is a two-step process:

1. Is the material a "solid waste"?
2. Is it "hazardous"?

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Solid waste is defined as: "any garbage, refuse, sludge from a waste treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and community activities, but does not include solid or dissolved material in domestic sewage."

A material that fits the definition of solid waste may be regulated as hazardous waste under RCRA if it poses a threat to human health or the environment. RCRA defines hazardous waste as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may... pose a hazard to human health or the environment." The EPA has identified over 450 substances as "listed wastes" because they are known to be hazardous, but if a substance does not appear on a list, it does not mean it is not "hazardous." It could be classified as a "characteristic waste," or based on the waste generator's knowledge of the process or material used to produce the waste, or sampling results, the waste could be classified as hazardous.

Hazardous Waste Storage - Hazardous waste storage is defined by the RCRA rules as the means of holding hazardous waste for a temporary period, prior to treatment, disposal, or additional storage. While the definition of storage is broad, it also specifically distinguishes storage, which is temporary, from treatment and disposal, which both result in permanent changes to a hazardous waste. Anyone storing hazardous waste has to comply with the federal RCRA storage rules, which require storage facilities to be permitted. In addition, RCRA strictly regulates several types of hazardous waste storage, including storage in containers, tanks, containment building, surface impoundments, and waste piles.

A Large Quantity Generator ("LQGs") or a Small Quantity Generator ("SQGs") may store hazardous wastes on-site without a storage permit provided that

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the generator complies with RCRA's accumulation rule. While the accumulation rule sets forth requirements applicable only to LQGs or only to SQGs, the rule also requires both types of generators to comply with the following requirements:

- EPA ID number. All generators who generate more than 100 kg of hazardous waste per month are required to have an EPA identification (ID) number.
- Identification and labeling. All containers and tanks must be marked with the date that the storage period began, and be labeled with the words "Hazardous Waste."
- Preparedness and prevention plan. Generators have to have a preparedness and prevention plan that details what emergency equipment and response teams are available to respond to a fire, explosion, or release of hazardous waste.

A LQG may accumulate hazardous waste on-site for up to 90 days without a storage facility permit if, in addition to the general requirements, the LQG complies with the following:

- Storage standards. To store hazardous waste, the generator needs to meet the federal container hazardous waste storage tank or containment building standards.
- Contingency plans. LQGs are required to have a written contingency plan. A contingency plan specifies what actions must be taken in response to a fire, explosion, or release of hazardous waste.
- Employee training. LQGs are responsible for training employees to properly manage hazardous waste generated on-site.
- Biennial report. LQGs that ship waste off-site for treatment, storage, or disposal are responsible for submitting the federal

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biennial report to state environmental authorities.

Hazardous Waste Accumulation - Generators of hazardous waste are responsible for removing the waste from their site to a permitted Treatment, Storage and Disposal Facility (TSDF”), before specific volume and time limits are exceeded. The specific limit is dependent on several factors, chiefly how much waste is generated within a month. Accumulation time limits give a generator a period in which storage of hazardous waste is allowed without a permit. The categories of hazardous waste generators and the allowed accumulation time are as follows:

- Large Quantity Generators (“LQGs”), that are generating more than 1,000 kilograms (kg) of hazardous waste or more than 1 kg of acutely hazardous waste per month, may accumulate waste for up to 90 days without a storage facility permit. However, to take advantage of the 90-day permit-free accumulation time period, the LQG has to meet specific on -site storage requirements.
- Small Quantity Generators (“SQGs”) are those generators producing more than 100 kg, but less than 1,000 kg of hazardous waste, and less than 1 kg of acutely hazardous waste per month. SQGs are allowed to store hazardous waste on-site for up to 180 days.
- Conditionally Exempt Small Quantity Generators (“CESQGs”) generate less than 100 kg of hazardous waste, or 1kg of acutely hazardous waste, and are not subject to any specific time limits. However, they may not accumulate more than 1kg of acutely hazardous waste or more than 1,000 kg of hazardous waste at any time.

Satellite Accumulation. LQGs may accumulate 55 gallons of any hazardous waste, or one quart of

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acutely hazardous waste, in containers or containment buildings that are away from the generator's main storage area for an unlimited amount of time, if certain storage rules are met.

Hazardous Waste Disposal - RCRA has extensive rules and restrictions covering the disposal of hazardous waste, which include disposal facility permit requirements and land disposal prohibitions. Disposal of hazardous waste is defined by RCRA as "the discharge, deposit, injection, dumping, spilling, leaking, or placing of solid or hazardous waste into any land or water so that such solid or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or any waters, including groundwaters."

In order for the RCRA hazardous waste rules to be applicable to a particular substance, the substance must first be identified as a "hazardous waste." Generators must first determine whether its generated material is, a "waste", secondly, a "solid waste", and, thirdly, a "hazardous waste." There are two methods for making this third determination. The substance may be a "listed" waste, that is, one of hundreds of substances that the EPA has placed on a list of hazardous wastes. Alternatively, the substance may be a "characteristic" hazardous waste, that is, one that through testing exhibits any of the following four hazardous waste characteristics: ignitability, corrosivity, reactivity, or toxicity.

Hazardous waste management standards established by regulation are dependent upon the volume of hazardous waste generated at the facility. In general, hazardous waste generators must identify waste as hazardous, obtain an EPA identification (ID) number, store the hazardous waste properly on-site, package the hazardous waste for shipment off-site, manifest the shipment, develop and maintain a contingency plan, train employees who manage hazardous waste, complete biennial reports, minimize the amount of hazardous waste generated and reduce the toxicity of the hazardous waste.

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Solid Waste - Solid waste, as defined by RCRA, is a much broader term than it might seem. In this context, "solid" can include liquid-like substances and even gases. Whether a material is solid has more to do with its method of disposal than with its appearance. If the waste is treated, stored or disposed of (in the sense of being trucked away, burned, etc.), it is probably regulated under RCRA as a solid waste no matter what it looks like.

For a substance to be a 'waste,' it must be in the process of being disposed of. Disposal is a very broad term. Under RCRA, disposal means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water, so that such waste or any constituent of the waste may enter the environment or be emitted into the air, or discharged into any waters, including groundwaters. Under this definition, virtually any disposition, even passive storage in some circumstances, can constitute disposal.

RCRA separates wastes into two broad categories - hazardous and non-hazardous. Non-hazardous wastes are regulated under RCRA Subtitle D, while hazardous are regulated wastes under RCRA Subtitle C.

Non-hazardous (solid) waste is most often disposed of in landfills, which for years were regulated by state, county, and local requirements rather than federal rules. However, EPA's 1991 solid waste landfill rules established federal standards that required compliance by all municipal solid waste landfills by October 1993. Each state was responsible for implementing these new federal requirements.

Used oil - RCRA requires the EPA to establish standards for recycled used oil that will protect public health and the environment, and at the same time, not discourage used oil recycling. On September 10, 1992, the EPA issued its final rule on recycled used oil management standards. Primarily, the management standards apply to used oil generators, transporters, marketers, processors, and re-refiners. These

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management standards include storage and release response requirements, tracking and recordkeeping requirements, and bans on certain practices that have caused contamination problems (road oiling and the storage of used oil in non-permitted surface impoundments).

Used oil is any oil that is refined from crude oil, or any synthetic oil, that has been used, and as a result of use, is contaminated by chemical or physical impurities. Excluded from the used oil management regulations are:

- mixtures of used oil and diesel fuel mixed by the generator or an "aggregation point" for use in their own vehicles
- used oil that contains more than 50 ppm polychlorinated biphenyls (PCBs), which is regulated under 40 CFR 761
- used oil that is to be introduced into crude oil or natural-gas pipelines, and is regulated only until the point where it is introduced into the pipeline
- used oil produced on vessels from normal shipboard operations
- wastewater contaminated with *de minimis* quantities of used oil

Recycled used oil is defined as any *used oil* that is reused following its original use, for any purpose, including the purpose for which the oil was originally used. Oil that has been re-refined or reclaimed, burned for energy recovery, or reprocessed is also recognized as having been recycled. The majority of used oil recycling involves processing the used oil into fuel to be burned for energy recovery.

All generators, processors, re-refiners, transporters, and collectors of recycled used oil are affected by the used oil management standards, with the exception of some categories of minor used oil generators.

Depending on the concentration of pollutants, used oil

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burned for energy recovery, and any fuel produced from used oil by processing, blending, or other treatment, can either be "off-specification used oil," or "specification used oil." Each classification is subject to a different level of regulation.

Generators of used oil must keep storage units in good condition, label storage tanks and containers "used oil," clean-up spills or leaks, and use a transporter with an EPA ID number. Generators can store used oil in tanks and containers regulated under RCRA. Used oil cannot be stored in a surface impoundment, unless it is a permitted hazardous waste impoundment.

All aboveground tanks or containers that are used must be in good condition and be properly labeled as "used oil." Generators must ensure that all tanks and containers are free of any visible spills or leaks, as well as structural damage or deterioration. If used oil is stored in an underground storage tank ("UST"), that UST would have to comply with the standards for USTs. Fill pipes that transfer used oil into USTs must be marked clearly with the words "used oil."

The EPA has decided that used oil filters do not have to be treated as hazardous waste provided that the oil is drained from them, and the filter is not plated with terne (an alloy of tin and lead).

Used oil filters must be properly drained in order to fit into the exemption. The EPA requires that filters remove used oil by either puncturing the filter anti-drain back valve or the filter dome end and hot-draining, hot-draining and crushing, dismantling and hot-draining or any other equivalent hot-draining method that will remove used oil.

Management of Hazardous Materials: Shipyards use many types of materials and chemical products that are potentially hazardous to human and/or environmental health. Examples include paints, thinners, petroleum products, abrasive blast media, solvents, adhesives, resins, compressed or liquefied gasses and many others. To ensure that these types of materials are managed in such a manner so as to minimize their hazards, both safety and environmental agencies have

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promulgated regulations regarding these substances. These regulations generally are concerned with how to store and manage hazardous materials on-site, train workers on the proper handling of hazardous materials, plan for hazardous materials accidents, and report releases of hazardous materials to the proper authorities.

Uniform Fire Code - The Uniform Fire Code (“UFC”) is a model code setting construction standards for buildings and pertaining fixtures, in order to prevent or mitigate hazards resulting from fire or explosion. Each regional association of fire chiefs publishes its own fire code (for application within the region) and updates it periodically. Since each local fire jurisdiction administers its own fire code and may adopt the UFC, whole or in part, by ordinance, it takes time for amendments to the UFC to come into force. Local fire codes often contain some articles from earlier versions of the UFC, or may exclude certain provisions, and/or include unique local elements.

Part VII of the UFC addresses "special subjects" such as cryogenic fluids, flammable and combustible liquids, and hazardous materials. Many of these subjects cover hazardous and toxic substances and their uses. The two most important sections, or “Articles,” that regulate hazardous materials are Article 79 and Article 80.

Article 79 regulates the storage, handling and use of flammable and combustible liquids. These liquids must have warning signs, their containers *must* be compatible with their contents, and incompatible substances *must* be segregated. Tanks must be properly vented, sprinkler systems must be installed in buildings used for chemical storage or application, and safe chemical mixing and onsite transportation practices instituted.

Article 80 addresses hazardous materials. This Article regulates the manufacture, storage, onsite transportation and use of these materials. Fire agencies can require facilities to separate incompatible materials and place materials in areas

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that do not present a fire or life hazard. This Article also requires hazard identification signs and procedures for spill responses.

OSHA Hazard Communication - The OSHA Hazard Communication Standard (“HCS”) is not an environmental regulation per se, having as its main purpose the protection of worker health and safety. However, this regulation contains numerous hazardous material management requirements and can therefore play a significant role in the facility’s pollution prevention program.

The purpose of the HCS is to ensure that employers understand, and inform employees about, the particular hazardous substances in their workplace, the health risks associated with them, and how to take protective action. If employees understand the hazards and risks associated with chemical products, they are more likely to manage the material in such a manner that also protects the environment.

HCS requires that companies maintain information regarding the chemicals and chemical products used at the facilities. This information is provided in the form of a Material Safety Data Sheet (“MSDS”) that contains specific data regarding hazards, chemical and physical properties, health risks and response procedures. The MSDS is also an important document for meeting many environmental reporting requirements, as the MSDS provides much information regarding the specific chemical constituents of materials used on-site.

OSHA requires that employers provide training at the time of an employee’s initial assignment, and whenever a new hazard is introduced into the work area. This training is intended to provide the workers with very specific information regarding the chemical products with which they work. Effective training in - how to read an MSDS, understand chemical product labels, recognize chemical risks and use protective measures - will help ensure protection of employees as well as the air, land and water.

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Emergency Planning and Response - The term "emergency planning and response," as used in environmental regulations, is both a specific term that refers to extremely hazardous substances under the Emergency Planning and Community Right-To-Know Act ("EPCRA") and Superfund Amendments and Reauthorization Act ("SARA"), and a general term that refers to emergency planning and preparedness requirements covering other hazardous wastes and substances.

Emergency planning requirements under SARA Title III are primarily directed to the state and local authorities. SARA Title III requires facilities to notify state and local agencies if at any one time the facility has an extremely hazardous substance on-site in a quantity greater than its threshold planning quantity. A facility is also covered under SARA Title III if it releases any reportable quantity of an extremely hazardous substance, or a CERCLA hazardous substance. Some states may require additional facilities to participate in the emergency planning process.

RCRA Contingency Planning. Generators of hazardous waste are required to plan and prepare for accidents or spills during the transport, management and storage of hazardous waste on their site. A contingency plan is the document that sets out how a generator, treater, storer, or disposer of hazardous waste will respond to an emergency at its facility. In addition to a contingency plan, hazardous waste generators must also complete a preparedness and prevention plan, which details what response equipment and personnel will be available in the event of a fire, explosion, or release involving hazardous waste.

Spill Prevention, Control, and Countermeasure (SPCC) Program. The SPCC Program was implemented by the EPA in 1973 under the Clean Water Act. SPCC plans focus on procedures to prevent and control oil spills. The SPCC regulations require a regulated facility to prepare a written spill

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contingency plan within six months after operations commence. The facility must *implement* the plan no later than 12 months after operations commence. The facility notifies the EPA that the SPCC plan has been prepared, keeps the plan on file, and makes it available for review by the EPA. SPCC plans have to be certified by a registered professional engineer and prepared following good engineering practices.

With few exceptions, all shipyard facilities are subject to the requirement to prepare a SPCC plan and implement the required elements of the plan. The SPCC plan must be amended whenever there is a change in the shipyards design, construction, operation, or maintenance which substantially affects the potential for an oil discharge. The SPCC plan amendment must be implemented as soon as possible, but not later than six months after the change occurs.

The SPCC plan must be reviewed at least once every three years and amended to include more effective prevention and control technology to reflect any significant changes in the facility's design, construction, operation, or maintenance within six months of the change.

A civil penalty may be imposed for up to \$5,000 per day for each violation for failure to prepare a SPCC plan, have the SPCC plan and amendments certified by a registered professional engineer, implement the SPCC plan, submit appropriate information following a reportable spill, amend and implement the plan as required by the EPA regional administrator, amend the plan after change in facility design and/or review the plan every three years and amend if required.

Toxic Chemical Release Reporting - The Emergency Planning and Community Right-to-Know Act ("EPCRA") is an important law that has resulted in numerous regulatory requirements that affect almost all shipyards in their use and storage of hazardous chemicals. EPCRA is actually Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986, also known as SARA Title III.

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Under EPCRA, there are provisions for emergency planning procedures and requirements for companies to report the presence of hazardous chemicals in the workplace to certain state and local authorities. The Act is administered by the EPA and state and local agencies, and is intended to provide the public and local governments with information concerning potential chemical hazards in their communities.

In addition to the federal rules, nearly every state has its own community right-to-know regulations, along with separate reporting forms, and state and local regulatory agencies.

One section of EPCRA (Section 313) requires subject facilities to submit a Toxic Chemical Release Inventory Report (Form R) each year to the EPA. The purpose of the reporting requirement is to inform the public and government officials about releases of specified toxic chemicals to the environment, assist the government, researchers, and the public in the conduct of research and data gathering, and to aid in the development of appropriate regulations, guidance, and standards. This reporting requirement is often referred to as section 313 reporting because it is from section 313 of EPCRA. The EPA has identified 300 toxic chemicals that are subject to this yearly reporting requirement. Shipyards commonly store and use many of the chemicals for which reporting may be required, including chemicals in marine coatings such as metals and solvents.

Release Reporting - Many federal and state laws require timely reporting of releases of various substances. Failure to report certain spills can result in substantial penalties imposed on both the facility and its employees.

The initial release notification is usually required immediately, or within 24 hours of knowledge of the release. In some cases, follow-up written reports are also required.

A release of a CERCLA hazardous substance, in quantities equal to or greater than their reportable

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quantity, must be immediately reported to the National Response Center. Such release is also subject to state and local reporting under EPCRA. EPCRA requires that releases of a reportable quantity of a hazardous substance (CERCLA), or extremely hazardous substance, must be reported to the state emergency response commission (SERC) for each state likely to be affected by the release. Notice is also provided to the community emergency coordinator for the local emergency planning committee (LEPC) of any area affected by the release. If the release is a CERCEA hazardous substance, the NRC must also be notified. Notice is required immediately upon discovery of the release.

EPCRA's emergency notification requirements cover facilities that produce, use, or store hazardous chemicals as defined by OSHA's hazard communication standard, as well as any release of a hazardous substance or extremely hazardous substance in excess of the reportable quantity.

The Clean Water Act requires immediate notification when there has been any discharge of oil into or upon navigable waters or adjoining shorelines that is not authorized by a permit. Any oil spill has to be reported if it violates water quality standards, or causes a sheen or discoloration of the surface water or adjoining shorelines, or causes a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

The NRC must be notified if more than the reportable quantity of a RCRA hazardous waste is released. Many of these wastes are contained on the CERCLA list. If a waste is on the CERCLA list, the CERCLA reportable quantity applies. If the waste is not on the CERCLA list, but exhibits the characteristics of a hazardous waste, (ignitable, corrosive, reactive, toxic) the reportable quantity is 100 pounds.

Under RCRA, UST owners or operators are required to report a suspected release from a tank within 24 hours to the EPA or designated state authorities (if the

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state is authorized by the EPA to administer its own UST program). In addition, the EPA requires notice of any spills or overfills of petroleum tanks in excess of 25 gallons that causes a sheen on surface water, or spills or hazardous substances in excess of its reportable quantity under CERCLA Superfund.

Special Pollutants: Several different types of hazardous materials are specifically regulated by the EPA and/or other agencies. Three of these special pollutants commonly encountered in shipyard repair and construction work include polychlorinated biphenyls ("PCB"), asbestos and lead based paint. These substances are regulated by both occupational and environmental health and safety perspectives.

PCB - Polychlorinated Biphenyls ("PCB") are a class of chemical compounds that may be found in a number of situations in the shipyard, particularly on ongoing repair operations. Additionally, PCBs may be found in electrical (and other) equipment in the shipyard facility. Most manufacture and distribution of PCBs has been phased out over the last twenty years. As a result, most of the regulatory requirements that shipyards must comply with deal with storage and disposal.

Generators, transporters, brokers, storers, and disposers of PCB wastes are now required to complete a manifest for "cradle-to-grave" tracking of PCB wastes containing more than 50 parts per million (ppm) PCBs.

The manifest system is similar to the hazardous waste manifest tracking system under RCRA. The PCB tracking system requires use of the RCRA manifest forms, and completion requirements follow the RCRA system closely (including retention of manifest records, manifest discrepancies, unmanifested waste reports, and exception reports).

The PCB manifest system also requires that the owner or operator of the disposal facility prepare a Certificate of Disposal for the PCBs and PCB items disposed of at the facility. The disposal facility must keep a copy of the Certificate, send a copy to the

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generator, and a copy to any commercial storer. These copies must be kept for three years.

Asbestos - Federal asbestos regulation is divided among a number of agencies, including the EPA, OSHA, and DOT. Many states have also implemented more stringent regulations governing asbestos.

The EPA administers and enforces regulations under National Emission Standards for Hazardous Air Pollutants (“NESHAP”) rules that control asbestos manufacturing, building renovation and demolition activities, as well as asbestos emissions resulting from asbestos waste disposal and processing. The EPA must be notified whenever demolition or removal takes place, including onboard ships. If the amount of friable (crumbly) asbestos is less than 260 linear feet on pipes or 160 square feet on other facility components, the notice may be in any abbreviated form. During the removal or renovation project, the EPA requires that specific procedures be followed to prevent particulate asbestos material emissions to the outside air.

The EPA also has regulations proscribing the disposal of asbestos. All asbestos-containing waste material must be deposited as soon as is practical by the waste generator at an approved waste disposal site. Vehicles used to transport asbestos-containing waste material must be marked during the loading and unloading of waste so that the signs are visible. For all asbestos-containing waste material transported off the facility site, the shipyard must maintain waste shipment records similar to the form contained in the regulation. The shipyard must also provide a copy of the waste shipment record to the disposal site owners or generators at the same time as the asbestos-containing waste material is delivered to the disposal site, and retain copies of all waste shipments for at least two years.

OSHA's shipyard standard for asbestos regulates all shipyard work, including the demolition of salvage of structures and vessels, removal or encapsulation of materials, construction, alteration, repair, maintenance

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or renovation of vessels and structures, installation of asbestos products, clean-up of asbestos spills and transportation, disposal, storage, and containment of products containing asbestos at a construction site.

Storage Tanks: Tanks used to store hazardous substances or petroleum products are subject to a variety of federal rules and regulations governing various elements ranging from construction standards, monitoring, and removal. The types of regulatory programs that tanks can be subject to are generally divided as to the placement of the tank above ground or underground. It is important to note that the terms above ground and underground have regulatory definitions that can be confusing in some tank placement situations. That is to say, while a tank may appear to be above ground, it may actually be defined as an underground tank. A correct interpretation of the definitions is vital to understanding which set of regulatory requirements apply to any particular tank.

Underground storage tank requirements - the EPA's underground storage tank (UST) regulations apply to any person who owns or operates a UST or UST system. Both owners and operators are responsible for complying with the technical design and construction requirements, financial responsibility requirements, and corrective action requirements specified in the federal statute and rules. All federally regulated USTs must be registered, meet leak detection requirements and meet upgrade requirements (i.e., spill, overfill, and corrosion protection) by December 22, 1998.

In addition, owners and operators must meet financial responsibility requirements, perform a site check and corrective action in response to leaks, spills, and overfills, replace or close USTs that do not meet the upgrade requirements by December 22, 1998, follow regulatory rules during installation of new tanks, maintain records as required, and have periodic checks performed on corrosion protection and leak detection systems.

Several categories of full or partial exemptions and exclusions from the underground tank regulations are provided by the EPA. These lists should be consulted

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to determine whether an exemption or exclusion is applicable to any specific tank. For example, USTs that are used to hold hazardous waste and are regulated under RCRA, or USTs used in a water treatment systems that are regulated by a NPDES permit are excluded from the underground storage tanks regulations.

There are specific requirements regarding the design, construction and installation of both existing and new petroleum and chemical tanks. Existing USTs must be protected from spills, overfills, and corrosion by December 1998. When new USTs are installed, they are required to have leak detection and protection from spills, overfills, and corrosion. All tanks and piping have to already have leak detection.

In regard to petroleum tank corrosion protection, existing tanks may be constructed of either coated and cathodically protected steel or fiberglass. Additionally, a steel tank clad with fiberglass, or tanks fitted with an added cathodic protection system, an interior lining, or a combination of interior lining and cathodic protection may be used.

New petroleum tanks must be constructed of either coated and cathodically protected steel or fiberglass, or be a steel tank clad with fiberglass.

By December 1993, all USTs should have met the federal leak detection requirements. The oldest tanks, which are the most likely to leak, had the earliest compliance deadlines. The EPA has identified the following leak detection methods that UST owners and operators can use to meet the federal requirements for detecting leaks from portions of both tanks and piping that routinely contain product. These methods include groundwater monitoring, vapor monitoring, secondary containment with interstitial or internal monitoring and automatic tank gauging systems.

If a underground tank leaks, the owner/operator must respond to contain and stop the release. Additionally, notification of the release must be made to the proper regulatory authorities. If soil or groundwater has been contaminated as a result of a UST release, corrective

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activities must usually be taken to mitigate any environmental damage.

Recordkeeping is an important part of the UST regulatory requirements. UST owners and operators must maintain records on monitoring, cathodic protection, installation, release detection equipment calibration, maintenance, repairs, and closures. UST owners must also report on initial release abatement, initial site characterization, free product removal, clean-up, investigation, and corrective action. Records of testing results for any cathodic protection system, leak detection performance, and upkeep, repairs, and site assessment results at permanent closure must be kept for at least three years.

If the tank has not been used for a period of 12 months or more, the owner or operator must comply with permanent closure requirements. The owner or operator must notify authorities 30 days before closure, determine if leaks from the tank have damaged the environment (if there is damage, the owner or operator may be required to take corrective actions), and empty and clean the tank. In most instances, a closed tank is removed from the ground. If the tank is left in the ground, it must be filled with an inert material such as sand.

Air Quality Permitting: Currently there are three federal air permit programs under the Clean Air Act (CAA). Two of the federal permitting programs (preconstruction review and prevention of significant deterioration) are a part of the New Source Review (NSR) program. These air emissions permits have to be obtained prior to construction or modification of a major source of air pollution. The third program, Title V's operating permit program, is not part of the NSR program. A Title V operating permit will be issued after the completion of construction of a major source of a regulated air pollutant.

New Source Review Permitting - The NSR program was established by the 1977 amendments to the CAA and applies to major new sources of air pollution and modifications that cause a significant increase in emissions at existing major sources. Under this program, there are two types of permits: a

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preconstruction review permit for non-attainment areas, and a PSD permit for attainment areas.

- The preconstruction review permit. Preconstruction review permitting programs only affect non-attainment areas for one or more of the federal criteria pollutants. This permit is issued either by EPA or by the state environmental agency prior to construction or modification of a major source.
- The prevention of significant deterioration (PSD) permit. PSD permits only apply to geographical areas that are in attainment with federal standards for criteria pollutants. This permit is issued by the EPA or by the state environmental agency prior to construction or modification of a major source.

The Title V operating permit - Title V's operating permit program applies to all major sources of regulated air pollutants. Title V regulations have been completed by the EPA on the federal level, but are still in the process of being developed on the state level. Once the EPA approves a state's Title V operating permit program, that state's environmental agency will administer and enforce the Title V operating permit program.

Hazardous Air Pollutants and NESHAPs - Hazardous Air Pollutants ("HAP") are those pollutants identified in the Clean Air Act Amendments ("CAAA") that when emitted into the air have the potential to cause acute and/or chronic human health effects. The EPA is tasked with establishing National Emission Standards for Hazardous Air Pollutants ("NESHAP") that establish standards for HAP emissions on a pollutant by pollutant basis. The Clean Air Act Amendments of 1990 changed this regulatory approach. The CAAA now requires the EPA to issue standards, over a 10 year period, regulating emissions of 189 toxic air pollutants on industry sector basis. Shipbuilding and

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repair is one of the industry sectors for which the EPA was required to develop emission standards.

The shipbuilding and repair industry HAP emission standard was promulgated in the form of a Maximum Achievable Control Technology (“MACT”) rule. The rule would limit the volatile organic hazardous air pollutants (VOHAP) content of several categories of marine coatings, and specify work practices that minimize evaporative emissions and spills from the handling, transfer, and storage of organic thinning solvent and paint wastes.

Compliance with the hazardous air pollutants (HAP) rule would be determined using the volatile organic compounds (VOC) content of the coating as a surrogate for the VOHAP content. Shipyards must submit reports demonstrating compliance, or in the case of noncompliance, reports demonstrating the extent and cause(s) of violation. Reports will contain much but not all of the information kept in a facility's records, and shall be submitted every 6 months following the compliance date.

Water Quality: Water quality regulations affect shipyard operations in many ways. The disposal of industrial waste water from the shipyard to the surface waters, or to the industrial waste water sewer, will be subject to important environmental requirements. Pollutant discharges to the waters are regulated through a National Pollution Discharge Elimination Permit. Discharges to the industrial waste water sewer are regulated through an Industrial Waste Water Disposal Permit. The purpose of the permits are to eliminate, or reduce to the maximum extent possible, the discharge of pollutants to the waters of the United States. By this process, it is envisioned that polluted water bodies will be cleaned-up and clean water bodies will not be degraded.

NPDES Permitting - Any pollutant-containing wastewater that is discharged into waters of the United States is probably subject to the National Pollutant Discharge Elimination System (NPDES) program. The NPDES program requires dischargers to obtain permits from the EPA, or from their state, if

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their state is authorized by the EPA to administer the program.

The NPDES permit establishes what may be discharged and at what levels. After it is issued, the owner or operator will be required to comply with its conditions, including compliance with effluent standards for toxic pollutants. It also will require the owner or operator to maintain records, to perform monitoring, and to properly operate and maintain all treatment and control systems. Monitoring information will usually be recorded on a Discharge Monitoring Report (DMR).

Effluent limitations represent the maximum quantity, rate, and concentration of specific pollutants allowed to be discharged from industrial point sources, such as shipyards, into U.S. waters.

Federal regulations define effluent limitations as: “Any restriction established by a state or EPA on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters, the waters of the contiguous zone, or the ocean.”

Effluent limits are typically embodied in a federal or state NPDES permit and proscribe numerical concentration limits of specific chemical constituents. The limits may be expressed as instantaneous or time-weighted average concentrations. Monitoring of waste water discharges must be performed on a regular basis to determine if the shipyard discharges are in conformance with the effluent limits. Testing results are reported to the appropriate agency for review, and possible corrective action if warranted.

In addition, the permit will require the owner or operator to provide information and access for inspections and sampling on request to the permitting agency.

Permit violators are subject to civil penalties of up to \$10,000 per day of violation. Willful or negligent violations are punishable by fines of up to \$25,000 per day, and/or imprisonment for up to one year.

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Stormwater Permits. Stormwater discharges result when pollutants on land are washed into surface waters by rain, snow melt, or other forms of precipitation. These are referred to in the regulations as "non-point-source discharges." Stormwater discharges are distinguished from point-source discharges, which are discharges from industrial activities directly into surface waters.

Many types of industrial facilities are required to obtain either federal or state NPDES permits to discharge stormwater. The largest number of regulated facilities are those associated with industrial activity. Regulated industrial facilities are identified either by their Standard Industrial Classification (SIC) code number or by a general description in the rule. Shipyards are one of the listed SIC code categories which are required to have storm water discharge permits.

There are two types of stormwater NPDES permits: individual permits and general permits. There are three different general permits: 1) general permit for industrial activities; 2) general permit for construction activities, and 3) multi-sector general permit for industrial activities. The multi-sector permit for industrial activities are applicable to industry sectors (including the ship building and repair industry) that are located in states that are not authorized by the EPA to administer the NPDES permit program, and are therefore subject to federal jurisdiction. In federally authorized states, most shipyards are subject to the requirements of a general industrial activities permit issued by a state or local agency.

Storm water permits contain several common elements including requirements for the facility to prepare a Storm Water Pollution Prevention Plan ("SWPPP") that identifies actual and potential sources of storm water pollution at the facilities. Once the sources of pollution have been identified, the facility develops and implements Best Management Practices ("BMP") designed to reduce the level of pollutants to the maximum extent practical.

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In addition to instituting BMPs, most facilities are required to implement a program of sampling and monitoring their stormwater discharges for pollutants likely to be discharged from the site. This information can then be used to determine the effectiveness of the BMPs in reducing the pollutant load to stormwater.

Significant civil and criminal penalties exist for violations of the Clean Water Act requirements of discharges of storm water, including penalties of up to \$25,000 per day of violation. Additionally, the Clean Water Act allows citizens to file lawsuits against companies to enforce the statute, regulations and permit conditions.

Industrial Waste Water Permitting - Industrial waste water discharges to a Public Owned Treatment Works ("POTW") are subject to requirements imposed by the local waste water treatment agency. These requirements are derived from the fact that the discharges from the POTW after treatment must meet EPA limitations. To ensure that the POTW can continue to meet the federal standards, and that its treatment system is not "upset" by certain types of potential discharges into the system, discharge permits are issued to the system users.

Pretreatment is the method by which industrial dischargers treat their wastewater before discharging it into a POTW. POTWs include any system used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial waste in liquid form. It includes pipes, sewers, and conveyances if they are used to convey wastewater to a POTW treatment plant.

The twofold objective behind the establishment of pretreatment standards is to ensure that pollutants are not discharged into the systems, which would either "interfere" with the POTW's functioning, or would allow pollutants to "pass through" without first receiving appropriate pretreatment.

A pass through is defined as a discharge from the POTW into waters of the United States, which either because of quantity or concentration, causes the

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POTW to violate its National Pollutant Discharge Elimination System (NPDES) permit. An interference is defined as a discharge which inhibits the POTW, its treatment process, or its sludge processes, use, or disposal.

Pretreatment standards can be divided into prohibited discharges and categorical prohibitions. Prohibited discharges apply to all sources. The categorical prohibitions are additional standards that apply to particular industries.

The EPA has compiled a list of substances that are specifically prohibited from being introduced into POTWs. Prohibited discharges are applicable to all industrial dischargers.

Prohibited discharges into a POTW include pollutants that: (1) create a fire or explosion hazard; (2) cause corrosive structural damage to the POTW; (3) solid or viscous pollutants that would obstruct the flow in the POTW and cause an interference; (4) petroleum oil, or products of mineral oil origin in amounts that will cause interference; (5) pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems; (6) any trucked or hauled pollutants, except at discharge points designated by the POTW; (7) heat that would inhibit biological activity in the POTW, causing an interference; and, (8) any pollutant released at a flow rate or concentration that would cause an interference.

The federal rules specify that dilution is not an acceptable form of pretreatment, unless *expressly* authorized by an applicable pretreatment standard.

Categorical standards are additional industry-specific prohibitions. The EPA has not established industry specific prohibitions for shipyards at this time. Shipyards must therefore be in compliance with the requirements for prohibited discharges and any substance specific limitations imposed by the POTW that receives its waste water.

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Emergency Response: When oil or a hazardous material is spilled or discharged into the environment an immediate response is required to contain and remove the material. To ensure that a facility is properly prepared to respond to an accident, both the U.S. Coast Guard and the EPA have requirements for response planning and training that affect shipyards. The Coast Guard requirements generally pertain to vessel operations and facility to/from vessel transfers of oil and/or hazardous substances. The EPA requirements pertain to those shipyard operations and/or processes that are considered to be “non-transportation” related. This would involve oil and hazardous substance storage tanks, facility transfers and pipelines.

EPA Facility Response Plans - The owner or operator of any non-transportation-related onshore facility (which includes that portion of the shipyard not subject to Coast Guard contingency planning requirements) that, because of its location, could reasonably be expected to cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines, must prepare and submit a facility response plan to the EPA Regional Administrator.

The EPA defines substantial harm based on a combination of oil storage capacity and potential environmental impact factors. The applicability standard most likely to subject a shipyard to this requirement is the definition of substantial harm as a facility that transfers oil over water to or from vessels, and has a total oil storage capacity greater than or equal to 42,000 gallons (1,000 barrels). All facility response plans must be consistent with the requirements of the National Oil and Hazardous Substance Pollution Contingency Plan and applicable Area Contingency Plans.

The EPA requires that a Facility Response Plan (“FRP”) follow the format of the model facility-specific response plan provided by the EPA in Appendix F of 40 CFR 112, unless an equivalent response plan has been prepared to meet state or other

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federal requirements. To be acceptable, the FRP must address the following elements:

- Emergency response action plan
- Facility information
- Information about emergency response
- Hazard evaluation
- Response planning levels
- Discharge detection systems
- Plan implementation
- Self-inspection, drills/exercises, and response training
- Diagrams (site and drainage plans)
- Security systems.

The EPA provides specific guidance concerning the appropriate content of each of the subject areas above. This guidance must be consulted prior to preparing the FRP and its subsequent submittal to the Regional Administrator.

The facility owner or operator must develop a facility response training program to train those personnel involved in oil spill response activities. The EPA recommends that the training program be based on the U.S. Coast Guard's Training Elements for Oil Spill Response, as applicable to facility operations. An alternative program can also be acceptable subject to approval by the Regional Administrator. Training includes:

- Proper instruction of facility personnel in the procedures to respond to discharges of oil, as well as applicable oil spill response laws, rules, and regulations
- Training shall be functional in nature according to job tasks for both supervisory and non-supervisory operational personnel
- Trainers shall develop specific lesson plans

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on subject areas relevant to facility personnel involved in oil spill response and clean-up.

Facility response drills/exercises - The facility owner or operator must develop a program of facility response drills/exercises, including evaluation procedures. The EPA recommends a program that follows the National Preparedness for Response Exercise Program (PREP). An alternative program can also be acceptable subject to approval by the Regional Administrator.

Coast Guard Facility Response Plans - Response plans are required for all marine transportation related ("MTR") facilities that could reasonably be expected to cause substantial harm, or significant and substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shoreline.

Elements of a facility response plan include:

- Qualified individual and alternate qualified individual
- Methods of ensuring the availability of response resources by contract or other approved means
- Worst case discharge - The response plan must use the appropriate criteria to determine the volume of a worst case discharge
- Specific Requirements for facilities that could reasonably be expected to cause significant and substantial harm to the environment
- Specific requirements for facilities that could reasonably be expected to cause substantial harm to the environment
- Specific response information to be maintained on mobile MTR facilities
- Specific requirements for mobile substantial harm facilities are described,

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related to maintaining required information at the mobile facility

- Response plan development and evaluation criteria for facilities that handle, store, or transport Group I through Group IV oils
- Response plan development and evaluation criteria for facilities that handle, store, or transport Group V oils
- Response plan development and evaluation criteria for facilities that handle, store, or transport non-petroleum oils
- Training - A facility operator must provide training to each individual with responsibilities under the response plan
- Drills - The response plan must contain detailed information on the type and frequency of oil spill drills to be conducted at the facility
- Inspection and maintenance of response records
- Submission and approval procedures - A facility's response plan must be submitted to the COTP for initial review and, if appropriate, approval
- Plan revision and amendment procedures

Conclusions: Federal environmental requirements that do or may effect shipyard operations are numerous and complex in their scope and application. Virtually all shipyard processes in both new construction and repair can or maybe subject to some regulatory requirement. For many of the requirements determining compliance is more qualitative than quantitative. To ensure that the shipyard maintains compliance with the regulations it is important a comprehensive environmental management plan is implemented with adequate resources to accomplished the required goal.

The number and stringency of the environmental requirements will most likely increase throughout the foreseeable future.

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